

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

SRI INTERNATIONAL, INC.,  
a California Corporation,

Plaintiff and  
Counterclaim-Defendant,

v.

INTERNET SECURITY SYSTEMS, INC.,  
a Delaware corporation,  
INTERNET SECURITY SYSTEMS, INC.,  
a Georgia Corporation, and  
SYMANTEC CORPORATION,  
a Delaware corporation,

Defendants and  
Counterclaim- Plaintiffs.

Civil Action No. 04-CV-1199 (SLR)

**FILED UNDER SEAL**

**DECLARATION OF GEOFFREY M. GODREY IN SUPPORT OF  
DEFENDANTS' JOINT CLAIM CONSTRUCTION RESPONSE BRIEF**

Richard L. Horwitz (#2246)  
David E. Moore (#3983)  
POTTER ANDERSON & CORROON LLP  
Hercules Plaza, 6th Floor  
1313 N. Market Street  
Wilmington, DE 19899  
Tel.: (302) 984-6000  
Fax: (302) 658-1192

OF COUNSEL:  
Holmes J. Hawkins III  
Natasha H. Moffitt  
KING & SPALDING LLP  
191 Peachtree St.  
Atlanta, GA 30303  
Tel: (404) 572-4600  
Fax: (404) 572-5100

Theresa A. Moehlman  
KING & SPALDING LLP  
1185 Avenue of the Americas  
New York, New York 10036  
Tel.: (212) 556-2100  
Fax: (212) 556-2222

Attorneys for Defendant  
INTERNET SECURITY SYSTEMS, INC.,  
a Delaware Corporation and  
INTERNET SECURITY SYSTEMS, INC.,  
a Georgia Corporation

Richard K. Herrmann (#405)  
Mary B. Matterer (#2696)  
MORRIS, JAMES, HITCHENS  
& WILLIAMS, LLP  
222 Delaware Avenue, 10th Floor  
Wilmington, DE 19801  
Tel: (302) 888-6800  
Fax: (302) 571-1750

OF COUNSEL:  
Lloyd R. Day, Jr. (*pro hac vice*)  
Robert M. Galvin (*pro hac vice*)  
Paul S. Grewal (*pro hac vice*)  
DAY CASEBEER MADRID  
& BATCHELDER LLP  
20300 Stevens Creek Blvd., Suite 400  
Cupertino, CA 95014  
Tel: (408) 873-0110  
Fax: (408) 873-0220

Michael J. Schallop (*pro hac vice*)  
Symantec Corporation  
20330 Stevens Creek Blvd.  
Cupertino, CA 95014  
Tel: (408) 517-8000  
Fax: (408) 517-8121

Attorneys for Defendant  
SYMANTEC CORPORATION

Dated: June 30, 2006

REDACTED: July 12, 2006

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE

SRI INTERNATIONAL, INC., a  
California Corporation,

Plaintiff and  
Counterclaim-Defendant,

v.

INTERNET SECURITY SYSTEMS, INC.,  
a Delaware corporation, INTERNET  
SECURITY SYSTEMS, INC., a Georgia  
corporation, and SYMANTEC  
CORPORATION, a Delaware corporation,

Defendants and  
Counterclaim-Plaintiffs.

Civil Action No. 04-CV-1199 (SLR)

**FILED UNDER SEAL**

THIS DOCUMENT CONTAINS  
MATERIALS WHICH ARE  
CONFIDENTIAL AND COVERED BY A  
PROTECTIVE ORDER. THIS  
DOCUMENT SHALL NOT BE MADE  
AVAILABLE TO ANY PERSON OTHER  
THAN THE COURT AND OUTSIDE  
COUNSEL OF RECORD FOR THE  
PARTIES.

**DECLARATION OF GEOFFREY M. GODFREY  
IN SUPPORT OF DEFENDANTS'  
JOINT CLAIM CONSTRUCTION RESPONSE BRIEF**

I, Geoffrey M. Godfrey, declare as follows:

1. I am a member of the law firm of Day Casebeer Madrid & Batchelder LLP, counsel for Defendant Symantec Corporation. I am admitted to practice law before all courts of the State of California.
2. I make this declaration of my own personal knowledge. If called to testify as to the truth of the matters stated herein, I could and would do so competently.
3. Attached hereto as Exhibit A is a chart of the parties' consolidated claim construction proposals.
4. Attached hereto as Exhibit B is a chart showing the parties' proposed

“monitor” constructions in the context of representative claims.

5. Attached hereto as Exhibit C is a true and correct copy of selected pages of the deposition transcript of Teresa Lunt.

6. Attached hereto as Exhibit D is a true and correct copy of selected pages of the 5/25/06, 5/26/06, and 5/29/06 deposition transcripts of George Kesidis.

7. Attached hereto as Exhibit E is a true and correct copy of selected pages of the 3/22/06 and 3/23/06 deposition transcripts of Alfonso Valdes.

8. Attached hereto as Exhibit F is a true and correct copy of selected pages of the 3/9/06 and 3/10/06 deposition transcripts of Phillip Porras.

9. Attached hereto as Exhibit G is a true and correct copy of selected pages from RANDOM HOUSE DICTIONARY OF THE ENGLISH LANGUAGE (Unabridged 2d ed. 1987).

10. Attached hereto as Exhibit H is a true and correct copy of selected pages from WEBSTER'S II NEW COLLEGE DICTIONARY (1995).

11. Attached hereto as Exhibit I is a true and correct copy of selected pages from COMPUTER DICTIONARY, Microsoft Press (3d ed. 1997).

12. Attached hereto as Exhibit J is a true and correct copy of selected pages from D. BRENT CHAPMAN & ELIZABETH D. ZWICKY, BUILDING INTERNET FIREWALLS (1995) (SYM\_P\_0498347-742).

13. Attached hereto as Exhibit K is a true and correct copy of selected pages from COMPUTER PROFESSIONAL'S DICTIONARY (1990).

14. Attached hereto as Exhibit L is a true and correct copy of the Statistical Functions page from Microsoft's Office Online Assistance Guide for Excel 2003,

<http://office.microsoft.com/en-us/assistance/HP052030661033.aspx>, printed at my direction on 6/30/06.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge.

Dated: June 30, 2006

By:   
Geoffrey M. Godfrey

# **EXHIBIT A**

SRI v. Internet Security Systems, et al.

**Exhibit A - Consolidated Claim Construction Proposals**

PATENT(S)	CLAIM TERM	SRI'S CONSTRUCTION	DEFENDANT'S CONSTRUCTION
all patents (multiple claims)	network monitor / monitor	process or component in a network that can analyze data; depending on the context in specific claims, the network monitor may analyze network traffic data, reports of suspicious network activity or both. Service monitors, domain monitors and enterprise monitors are examples of network monitors.	generic code that can be dynamically configured and reconfigured with reusable modules that define the monitor's inputs, analysis engines and their configurations, response policies and output distribution for its reports.
'615, '203 and '212 patents (multiple claims), '338 patent (claim 13)	hierarchical monitor / hierarchically higher network monitor	process or component in a network that receives reports from at least one lower-level monitor.	a <i>network monitor</i> that receives reports as input from one or more network monitors that are at a lower layer in the analysis hierarchy.
'615, '203 patents (multiple claims)	hierarchical event monitoring [and analysis]	monitoring events through the use of a hierarchical monitor.	monitoring and analyzing events through the use of network monitors that are configured to form an analysis hierarchy of two or more layers.
'203, '212 and '615 patents (multiple claims)	service monitor	SRI does not believe the term needs construction but, if construed, should be construed to mean a network monitor that analyzes data from individual components or services.	a <i>network monitor</i> that provides local real-time analysis of network packets handled by a network entity.

SRI v. Internet Security Systems, et al.

## Exhibit A - Consolidated Claim Construction Proposals

PATENT(S)	CLAIM TERM	SRI'S CONSTRUCTION	DEFENDANTS' CONSTRUCTION
'203, '212 and '615 patents (multiple claims)	domain monitor	SRI does not believe the term needs construction but, if construed, should be construed to mean a network monitor that analyzes data from a domain.	a <i>network monitor</i> that receives and analyzes intrusion reports disseminated by <i>service monitors</i> .
'203, '212 and '615 patents (multiple claims)	enterprise monitor	SRI does not believe the term needs construction but, if construed, should be construed to mean a network monitor that analyzes data from an enterprise, <i>i.e.</i> a collection of domains.	a <i>network monitor</i> that receives and analyzes intrusion reports disseminated by <i>domain monitors</i> .
'203, '212 and '615 patents (multiple claims)	peer-to-peer relationships	SRI does not believe the term needs construction but, if construed, should be construed to mean relationships between two or more entities at the same level in a hierarchy.	relationship where entities at the same layer in a hierarchy receive reports from one another.
'615, '203 and '212 patents (multiple claims)	deploying a plurality of network monitors	SRI does not believe the term needs construction but, if construed, should be construed to mean locating two or more network monitors so as to allow them to receive data to be monitored and/or to send information.	installing and configuring two or more network monitors so that together they form an analysis hierarchy defined by the network monitors' inputs and output distribution.

SRI v. Internet Security Systems, et al.

## Exhibit A - Consolidated Claim Construction Proposals

PATENT(S)	CLAIM TERM	SRI'S CONSTRUCTION	DEFENDANT'S CONSTRUCTION
'615 patent (multiple claims)	based on analysis of network traffic data <i>selected from one or more</i> of the following categories...	SRI does not believe the phrase needs construction.	analysis is based on one or more of the following categories.
'203 patent (multiple claims)	based on analysis of network traffic data <i>selected from</i> the following categories...		
'615, '203 and '212 patents (multiple claims)	automatically receiving and integrating the reports of suspicious activity	without user intervention, receiving reports and combining those reports into another functional unit.	automatically receiving and combining the reports of detected suspicious network activity.
'615, '203 and '212 patents (multiple claims), '338 patent (claim 15)	correlating / correlates	combining the reports based on underlying commonalities between them.	determining relationships among the reports of detected suspicious network activity.
all patents (multiple claims)	responding . . . / invoking countermeasures	taking an action in response.	taking an action in response to a suspected attack, including passive responses such as report dissemination to other monitors or administrators, and highly aggressive actions, such as severing a communication channel or the reconfiguration of logging facilities within network components.



SRI v. Internet Security Systems, et al.

## Exhibit A - Consolidated Claim Construction Proposals

PATENT(S)	CLAIM TERM	SRI'S CONSTRUCTION	DEFENDANTS' CONSTRUCTION
'338 patent (multiple claims)	building at least one long-term and at least one short-term statistical profile from at least one measure of the network packets	creating at least one statistical description representative of historical network activity, and creating at least one statistical description of recent network activity, where the descriptions are based on one or more measures of network packets.	see below
	building at least one long-term . . . statistical profile from at least one measure of the network packets	see above	automatically generating and updating an exponentially aged probability distribution of historically observed activities from at least one measure of the network packets.
	building . . . at least one short-term statistical profile from at least one measure of the network packets	see above	automatically generating and updating an exponentially aged probability distribution of recently observed activities from at least one measure of the network packets.

SRI v. Internet Security Systems, et al.**Exhibit A - Consolidated Claim Construction Proposals**

<b>PATENT(S)</b>	<b>CLAIM TERM</b>	<b>SRI'S CONSTRUCTION</b>	<b>DEFENDANT'S CONSTRUCTION</b>
'338 patent (claims 1, 11, 21, 24, 25)	determining whether the difference between the short-term statistical profile and the long-term statistical profile indicates suspicious network activity	SRI does not believe the term needs construction but, if construed, should be construed to mean using the result of the comparison to decide whether the monitored activity is suspicious.	determining whether the difference between the <i>short-term statistical profile</i> and <i>long-term statistical profile</i> exceeds a threshold that is empirically determined to indicate suspicious activity based on the historically adaptive deviation between the two profiles, requiring no prior knowledge of suspicious activity.
'212 and '615 patents (multiple claims)	a statistical detection method	SRI does not believe the term needs construction but, if construed, should be construed to mean a method of detecting suspicious network activity by applying one or more statistical functions in the analysis of network traffic data.	a method of detecting suspicious network activity which comprises building a <i>long-term statistical profile</i> and a <i>short-term statistical profile</i> . This method requires no prior knowledge of suspicious network activity. This method is not a signature matching detection method or threshold analysis.
'212 patent (multiple claims)	a signature matching detection method	SRI does not believe the term needs construction but, if construed, should be construed to mean a method of detecting suspicious network activity by comparing observed network traffic data to known patterns.	a method of detecting suspicious activity which comprises comparing observed network traffic data to known patterns or thresholds.

**SRI v. Internet Security Systems, et al.**

**Exhibit A - Consolidated Claim Construction Proposals**

PATENT(S)	CLAIM TERM	SRI'S CONSTRUCTION	DEFENDANTS' CONSTRUCTION
all patents (multiple claims)	proxy server	SRI does not believe the term needs construction but, if construed, should be construed to mean a server that mediates communication between a client application, such as a Web browser, and a real server. It handles requests to the real server to see if it can fulfill the requests itself. If not, it forwards the request to the real server.	a firewall component that enforces a security policy for a specific application or service.
'203, '615, and '212 patents (multiple claims)	API	a set of routines used to provide for communication of data between application programs or processes.	standard interface specification for communication.

# **EXHIBIT B**

**Exhibit B - Monitor Constructions In The Context Of Representative Claims**

(Commentary regarding constructions is indicated in the bold/italics text in the hard brackets):

213 Claiming	Prior Art Constructions	SRI's Constructions
1. A computer-automated method of hierarchical event monitoring and analysis within an enterprise network comprising:	A computer-automated method of monitoring and analyzing events in an enterprise network through the use of network monitors that are configured to form an analysis hierarchy of two or more layers	A computer-automated method of monitoring and analyzing events through the use of a hierarchical monitor.
[a] deploying a plurality of network monitors in the enterprise network;	<p>A <b>network monitor</b> is generic code that can be dynamically configured and reconfigured with reusable modules that define the monitor's inputs, analysis engines and their configurations, response policies and output distribution for its reports.</p> <p><b><i>Deploying a plurality of network monitors</i></b> means installing and configuring two or more network monitors so that together they form an analysis hierarchy defined by the network monitors' inputs and output distribution.</p> <p><b><i>[The advantages of (1) building an analysis hierarchy of any breadth or depth is achieved based on configuring the network monitors; (2) reuse of generic monitor code and reusable configuration modules reduces implementation and maintenance costs; and (3) adaptive analysis can occur by reconfiguring the monitors with different reusable modules]</i></b></p>	<p>A <b>network monitor</b> is a process or component in a network that can analyze data; depending on the context in specific claims, the network monitor may analyze network traffic data, reports of suspicious network activity or both. Service monitors, domain monitors and enterprise monitors are examples of network monitors.</p> <p><b><i>[Under SRI's construction, network monitor is to be construed differently within and among the claims depending on "context". Service, domain, and enterprise monitors are the terms of the patent, not the art. They do not add clarity.]</i></b></p> <p>SRI does not believe the term <i>deploying</i> needs construction but, if construed, should be construed to mean locating two or more network monitors so as to allow them to receive data to be monitored and/or to send information.</p> <p><b><i>[It is unclear which monitors are to be deployed. If all are deployed, then SRI construes "network monitor" here inconsistently with "network monitor" in the next claim element. If a hierarchical monitor is not a network monitor in this claim, then it is unclear how it gets deployed. Moreover, "locating" does not capture the word deploying, which includes the notion</i></b></p>

		<i>of forming a strategic arrangement of monitors as a group (i.e., an analysis hierarchy).]</i>
[b] detecting, by the network monitors, suspicious network activity based on analysis of network traffic data selected from the following categories: {network packet data transfer commands, network packet data transfer errors, ...}	<p>based on analysis of network traffic data... <i>selected from:</i> analysis is based on one or more of the following categories.</p> <p><i>[All monitors -- no matter where they are in the analysis hierarchy -- detect suspicious network activity based on analysis of network traffic data selected from one or more of the listed categories. The lowest level monitors analyze the network packet data directly. The higher-level monitors analyze reports from lower-level monitors and necessarily base their analysis on the same categories as those used by lower-level monitors.]</i></p>	<i>[SRI states in its brief that one would be able to discern that network monitor here means the lowest-level monitor that analyzes traffic data and not a hierarchical monitor. But this would be contrary to SRI's interpretation of the preamble that events are analyzed through the use of a hierarchical monitor.]</i>
[c] generating, by the monitors, reports of said suspicious activity; and	<i>[All monitors -- no matter where they are in the hierarchy -- generate reports]</i>	<i>[Again, it is unclear using SRI's constructions which monitors are to generate reports.]</i>
[d] automatically receiving and integrating the reports of suspicious activity, by one or more hierarchical monitors.	<p>automatically receiving and combining the reports of detected suspicious network activity by one or more <i>hierarchical monitors</i>. A <i>hierarchical monitor</i> is a <i>network monitor</i> that receives reports as input from one or more network monitors that are at a lower layer in the analysis hierarchy.</p> <p><i>[When deployed, at least one monitor was configured to receive reports from one or more lower-level monitors.]</i></p>	<p>A <i>hierarchical monitor</i> is a process or component in a network that receives reports from at least one lower-level monitor. The <i>hierarchical monitor</i>, without user intervention, receiving reports and combining those reports into another functional unit.</p> <p><i>[It is unclear what a functional unit is in this context -- is it the reports of suspicious activity? If so, then why does SRI not include hierarchical monitors in the monitor of element [c]? If not, how is it different?]</i></p>
203 Claim 7	Defendants' Constructions	SRI's Constructions
7. The method of claim 1, wherein deploying the network monitors includes placing a plurality of service	Two or more network monitors are installed and configured to be <i>service monitors</i> , which are <i>network monitors</i> that provide local real-time analysis of network packets handled by a network entity.	<i>Service monitors</i> -- SRI does not believe the term needs construction but, if construed, should be construed to mean a network monitor that analyzes data from individual components or services.



monitors among multiple domains of the enterprise network.	<i>[This is the definition of service monitor provided in the specification]</i>	<i>[This directly contradicts the definition of service monitor in the specification, which indicates a service monitor is not a hierarchical monitor. Under SRI's definition, a "component" could be another monitor and the service would receive reports to analyze.]</i>
<b>203 Claim 8</b>	<b>Defendants' Constructions</b>	<b>SRI's Constructions</b>
8. The method of claim 7, wherein receiving and integrating is performed by a domain monitor with respect to a plurality of service monitors within the domain monitor's associated network domain.	When deployed, a network monitor was installed and configured to be a <b>domain monitor</b> that receives and analyzes intrusion reports disseminated by at least the <b>service monitors</b> [of claim 7]. The <b>domain monitor</b> automatically receives and combines the reports of detected suspicious network activity from the <b>service monitors</b> .  <i>[This is the definition of domain monitor provided in the specification]</i>	<b>Domain monitors</b> -- SRI does not believe the term needs construction but, if construed, should be construed to mean a network monitor that analyzes data from a domain.  <i>[Domain monitor is a term of the patent that needs definition. It is unclear what "data from a domain" means. The patent states that domain monitors analyze reports from service monitors]</i>
<b>203 Claim 9</b>	<b>Defendants' Constructions</b>	<b>SRI's Constructions</b>
9. The method of claim 1, wherein deploying the network monitors includes deploying a plurality of domain monitors within the enterprise network, each domain monitor being associated with a corresponding domain of the enterprise network.	Two or more network monitors are installed and configured to be <b>domain monitors</b> that receive reports disseminated by <b>service monitors</b> .  <i>[This is the definition of domain monitor provided in the specification]</i>	<b>Domain monitors</b> -- SRI does not believe the term needs construction but, if construed, should be construed to mean a network monitor that analyzes data from a domain.  <i>[This claim is inconsistent with claim 1[a] where SRI's construction excludes deploying hierarchical monitors, such as domain monitors. It, therefore, cannot be achieved.]</i>
<b>203 Claim 10</b>	<b>Defendants' Constructions</b>	<b>SRI's Constructions</b>
10. The method of claim 9, wherein receiving and integrating is performed by an enterprise monitor with respect to a plurality of domain monitors within the	When deployed, a network monitor was installed and configured to be an <b>enterprise monitor</b> that receives and analyzes intrusion reports disseminated by at least the <b>domain monitors</b> of claim 9. The <b>enterprise monitor</b> automatically receives and combines the reports of detected suspicious network activity from the	<b>Enterprise monitor</b> -- SRI does not believe the term needs construction but, if construed, should be construed to mean a network monitor that analyzes data from an enterprise, i.e. a collection of domains.  <i>[It is unclear what "data from an enterprise" means. The patent states</i>

enterprise network.	<i>domain monitors.</i> <i>[This is the definition of enterprise monitor that is provided in the specification]</i>	<i>that enterprise monitors correlate reports from domain monitors.]</i>
---------------------	--	--



# **EXHIBIT C**

**EXHIBIT REDACTED  
IN ITS ENTIRETY**

# **EXHIBIT D**

**EXHIBIT REDACTED  
IN ITS ENTIRETY**

# **EXHIBIT E**

**EXHIBIT REDACTED  
IN ITS ENTIRETY**

# **EXHIBIT F**

**EXHIBIT REDACTED  
IN ITS ENTIRETY**

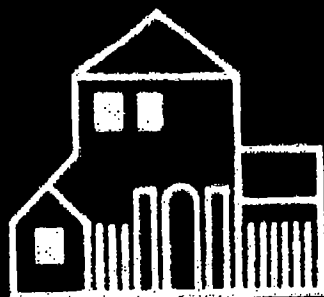


# **EXHIBIT G**

# THE RANDOM HOUSE DICTIONARY OF THE ENGLISH LANGUAGE

Second Edition

Unabridged



---

*Dedicated to the memory of  
Jess Stein*

---

COPYRIGHT © 1987, BY RANDOM HOUSE, INC.

First Edition: Copyright © 1983, 1981, 1979, 1973, 1971, 1970, 1969, 1967, 1966, by Random House, Inc.

All rights reserved under International and Pan-American Copyright Conventions. No part of this book may be reproduced in any form or by any means, electronic or mechanical, including photocopying, without permission in writing from the publisher.

All inquiries should be addressed to Reference Department, Random House, Inc., 201 E. 50th Street, New York, N.Y. 10022.  
Published in the United States by Random House, Inc., and simultaneously in Canada by Random House of Canada Limited, Toronto

*The Random House Dictionary of the English Language* and its abbreviations, RHD, RHDEL, RHD-I, and RHD-II, are trademarks of Random House, I

Library of Congress Cataloging-in-Publication Data  
The Random House dictionary of the English language.  
(Random House dictionaries)

1. English language—Dictionaries. I. Flexner,  
Stuart Berg. II. Series.

PE1625.R3 1987 423 87-4500

ISBN 0-394-50050-4; 0-394-56500-2 deluxe ed.

A number of entered words which we have reason to believe constitute trademarks have been designated as such. However, no attempt has been made to designate as trademarks or service marks all words or terms in which proprietary rights may exist. The inclusion, exclusion, or definition of a word or term is not intended to affect, or to express a judgment on, the validity or legal status of the word or term as a trademark, service mark, or other proprietary term.

*The Concise French Dictionary*, edited by Francesca L. V. Langbaum, Copyright © 1983, 1954, by Random House, Inc.

*The Concise German Dictionary*, edited by Jenni Karding Moulton, Copyright © 1983, 1959, by Random House, Inc.

*The Concise Italian Dictionary*, edited by Robert A. Hall, Jr., Copyright © 1983, 1957, by Random House, Inc.

*The Concise Spanish Dictionary*, edited by Donald F. Solá, Copyright © 1983, 1954, by Random House, Inc.

Entire contents of the *Atlas*, © Copyright Hammond Incorporated, Maplewood, N.J.

*International Phonetic Alphabet*, courtesy International Phonetic Association.

Manufactured in the United States of America

n. rr/uu

ant'), v.t. Archaic. to depict; portray. *depeinten* < OF *depeint*, ptp. of *depeindre* < *DEPICT*.

anta'), v.t. *Slang*. to remove the trouble or punishment. [*DE* + *PANTS*]

ti'), v.t. 1. to go away; leave: She *departs* today. The train *departs* at 10:52. 2. *eviate* (usually *fol.* by *from*): The new from the old in several respects. 3. to om life or existence; die. —u.t. 4. to go: to *depart* this life. —n. 5. Archaic. h. (1175-1225; ME *deparien* < OF *de-de* + *partir* to go away; see *PART*

*PART*, *RETIRE*, *RETREAT*, *WITHDRAW* imply *DEPART* is a somewhat literary word for a place: to *depart* on a journey. *RETIRE* anting oneself or drawing back from a position in battle. *RETREAT* implies withdrawal, esp. as a result of adverse forces; *retreat* to secondary lines of defense. *eviate* leaving some specific place or situation some definite and often unpleasant result from a hopeless task. 4. quit. —Ant.

i pär'tid), adj. 1. deceased; dead. 2. 3. the departed, a. the dead person dead persons collectively. [1550-60; *DE-*

pär'tä, dē-), n. a person who leaves y, etc. [1945-50; *DEPART* + *-EE*]

it (dä par'tä mən'), n. pl. -ments department (def. 7).

(di pärt'ment), n. 1. a distinct part of ed in divisions; a division of a complex sized system. 2. one of the principal governmental organization: the sanitation (cap.) one of the principal divisions of government, headed by a Secretary who the President's cabinet. 4. a division of a rise dealing with a particular area of acnel department. 5. a section of a retail particular class or kind of goods: the riment. 6. one of the sections of a school with a particular field of knowledge: partment. 7. one of the large districts ain countries, as France, are divided for purposes. 8. a division of official busi- functions: judicial departments. 9. a ace of activity, knowledge, or responsibility: (formerly) a large geographical division z possessions as divided for military and at the Hawaiian Department. [1730-35; nt, equiv. to *depar'tir* (see *DEPART*) + -*depar'tmen'tal* (di pärt'men'tl, dē-*le-par'tmen'tal*), adv. nch, bureau, section, unit, segment.

tal-ism (di pärt'men'tl iz'm, dē-pärt-), to divide into departments. Also, esp. nen'tal-ism'. [1895-1900; *DEPARTMENTAL* + *-ISM*]

tal-ize (di pärt'men'tl iz', dē-pärt-), to divide into departments. Also, esp. nen'tal-ize'. [1895-1900; *DEPARTMENTAL* + *-ize*]

al store', Brit. a department store.

of Agriculture, the department of l government that institutes and adminis- programs dealing with agriculture. Abbr.: b, Amer.]

of Commerce, the department of l government that promotes and adminis- foreign commerce. Abbr.: DOC

of Defense, the department of the vernment charged with ensuring that the ty of the U.S. is adequate to safeguard the ty. Abbr.: DOD

of Education, the department of the vernment that administers federal pro- with education; created in 1979, largely by part of the former Department of Health, Welfare. Abbr.: ED

of Energy, the department of the vernment that sets forth and maintains nergy policy, including energy conserva- ential protection, etc. Abbr.: DOE

of Health, Education, and Wel- er department of the U.S. government administered federal programs dealing ducation, welfare, and income security.

of Health and Human Serv- artment of the U.S. government that ad- cal programs dealing with public health, come security; created in 1979 from the partment of Health, Education, and Wel- IS

of Housing and Urban Devel- department of the U.S. federal govern- itutes and administers all federal pro-

for the enforcement of federal laws. Abbr.: DOJ

Department of Labor, the department of the U.S. federal government that promotes and improves the welfare, opportunities, and working conditions of wage earners. Abbr.: DOL

Department of State, the department of the U.S. federal government that sets forth and maintains the foreign policy of the U.S., esp. in negotiations with foreign governments and international organizations. Abbr.: DOS

Department of the Interior, the department of the U.S. federal government charged with the conserva- tion and development of the natural resources of the U.S. and its possessions. Abbr.: DOI

Department of the Treasury, the department of the U.S. federal government that collects revenue and administers the national finances. Abbr.: TD

Department of Transportation, the department of the U.S. federal government that coordinates and in- stitutes national transportation programs. Abbr.: DOT

department store, a large retail store carrying a wide variety of merchandise and organized into various departments for sales and administrative purposes. [1885-90, Amer.]

depar'ture (di pärt'chär), n. 1. an act or instance of departing; the time of departure; a hasty departure. 2. divergence or deviation, as from a standard, rule, etc.: a departure from accepted teaching methods. 3. Navig. a. the distance due east or west traveled by a vessel or aircraft. b. See point of departure. 4. Survey. the length of the projection, on the east-west reference line, of a survey line. 5. Archaic. death. [1375-1425; late ME < OF *depar'ture*; cf. AF *depar'tir* (n. use of inf.). See *DE-PART*, -URE]

—Syn. 1. leaving, going, exit, leave-taking.

de-pau-per-ate (di päp'pärit), adj. Biol. poorly or im- perfectly developed. [1425-75; late ME < LL *dēpauperatus* (ptp. of *dēpauperāre* to make poor), equiv. to *dē-* + *pauper* (see *PAUPER*) + *-atus* -AT-'] —de-pau-per-ate (di päp'pärit), n.

de-pend (di pend'), u.t. 1. to rely; place trust (usually fol. by *on* or *upon*): You may depend on the accuracy of the report. 2. to rely for support, maintenance, help, etc. (usually fol. by *on* or *upon*): Children depend on their parents. 3. to be conditioned or contingent (usually fol. by *on* or *upon*): His success here depends upon effort and ability. 4. to be undetermined or pending: I may go to Europe or I may not, it all depends. 5. Gram. (of a word or other linguistic form) to be subordinate to another lin- guistic form in the same construction; to form a part of a construction other than the head. 6. to hang down; be suspended (usually fol. by *from*): The chandelier depends from the ceiling of the ballroom. [1375-1425; late ME equiv. < OF *dependere* < L *dependere* to hang down, equiv. to *dē-* + *pendere* to hang]

de-pend-a-ble (di pen'dä bəl), adj. capable of being depended on; worthy of trust; reliable: a dependable em- ployee. [1725-35; *DEPEND* + -ABLE] —de-pend-a-bil-i-ty, de-pend-a-ble-ness, n. —de-pend-a-bly, adv.

—Syn. trustworthy, trusty, trusted, steadfast, faithful, responsible.

de-pend-a-nt (di pen'dent), adj., n. dependent. —de-pend-a-nt-ly, adv.

de-pend-ence (di pen'dens), n. 1. the state of relying on or needing someone or something for aid, support, or the like. 2. reliance; confidence; trust: Her complete reliability earned her our dependence. 3. an object of reliance or trust. 4. the state of being conditional or contingent on something, as through a natural or logical sequence: the dependence of an effect upon a cause. 5. the state of being psychologically or physiologically de- pendent on a drug after a prolonged period of use. 6. subordination or subjection: the dependence of Marti- nique upon France. Also, de-pend-ance. [1400-50; late ME *dependance* < OF *dependance*, equiv. to *dependere* (see *DEPEND*) + -ance -ENCE]

de-pend-en-cy (di pen'den sē), n., pl. -cies. 1. the state of being dependent; dependence. 2. something de- pendent or subordinate; appurtenance. 3. an outbuild- ing or annex. 4. a subject territory that is not an inte- gral part of the ruling country. Also, de-pend-en-cy. [1585-95; *DEPENDENCE* + -Y]

de-pend-en-cy-prone (di pen'den sē prōn'), adj. tending to become psychologically or physiologically de- pendent on a drug. [1965-70]

de-pend-ent (di pen'dent), adj. 1. relying on someone or something else for aid, support, etc. 2. conditioned or determined by something else; contingent: Our trip is de- pendent on the weather. 3. subordinate; subject: a de- pendent territory. 4. Gram. not used in isolation; used only in connection with other forms. In I walked out when the bell rang, when the bell rang is a dependent clause. Cf. independent (def. 14), main' (def. 4). 5. hanging down; pendent. 6. Math. a. (of a variable) hav- ing values determined by one or more independent vari- ables. b. (of an equation) having solutions that are iden- tical to those of another equation or to those of a set of equations. 7. Statistics. (of an event or a value) not sta- tistically independent. —n. 8. a person who depends on or needs someone or something for aid, support, favor, etc. 9. a child, spouse, parent, or certain other relative to whom one contributes all or a major amount of neces- sary financial support: She listed two dependents on her income-tax form. 10. Archaic. a subordinate part. Also, de-pend-ent. [1375-1425; late ME *dependant*. See *DE- PEND*, -ENT] —de-pend-ent-ly, adv.

depend-ent var'ia-ble, 1. Math. a variable in a functional relation whose value is determined by the val- ues assumed by other variables in the relation, as y in

(1865-70; *DE* + *PERM*)

De Pere (dä pär'), a city in E Wisconsin. 14,892.

de-perm (dē pär'm'), v.t. Naut. to reduce the perma- nent magnetism of (a vessel) by wrapping an electric cable around it vertically athwartships and energizing the cable. Cf. *degauss*. [1945-50; *DE* + *PERM*(ANENT)]

de-per-son-a-li-za-tion (dē pär'sō nl ä zä'shən), n. 1. the act of depersonalizing. 2. the state of being de- personalized. 3. Psychiatry. a state in which one no longer perceives the reality of one's self or one's envi- ronment. [1905-10; *DEPERSONALIZE* + -ATION]

de-person-a-lize (dē pär'sō nl iz'), v.t., -ized, -iz-ing. 1. to make impersonal. 2. to deprive of personality or individuality: a mechanistic society that is depersonal- izing its members. Also, esp. Brit., de-per-son-al-ize'. [1865-70; *DE* + *PERSONALIZE*]

De-pew (dä pyōō'), n. 1. Chauncey Mitchell, 1834- 1928, U.S. lawyer, legislator, and orator. 2. a town in W New York. 19,819.

de-phos-pho-ryl-ate (dē fos'fər ə lät'), v.t., -ated, -ating. Biochem. to undergo dephosphorylation. [*DE* + *PHOSPHORYLATE*]

de-phos-pho-ryl-a-tion (dē fos'fər ə lā'shən), n. Bio- chem. 1. the removal of a phosphate group from an or- ganic compound, as in the changing of ATP to ADP. 2. the resulting state or condition. [*DEPHOSPHORYLATE* + -ION]

de-pict (di pikt'), v.t. 1. to represent by or as if by painting; portray; delineate. 2. to represent or charac- terize in words; describe. [1625-35; < L *dēpictus* (ptp. of *dēpingere*), equiv. to *dē-* + *pic-* ptp. s. of *pingere* to PAINT + -tus ptp. suffix] —de-pict'er, de-pict'or, n. —de-pic'tion, n. —de-pic'tive, adj.

—Syn. 1. reproduce, draw, paint, limn. 1, 2. Depict, PORTRAY, SKETCH imply a representation of an object or scene by colors or lines, or by words. Depict emphasizes vividness of detail; to depict the confusion of departure. PORTRAY emphasizes faithful representation: We could not portray the anguish of the exiles. SKETCH suggests the drawing of the outlines of the most prominent fea- tures or details, often in a preparatory way: to sketch the plans for a community development.

de-pig-men-ta-tion (dē pig'men tā'shən), n. Pathol. loss of pigment. [1885-90; *DE* + *PIGMENTATION*]

de-pli-ate (dēplä'tē), u.t., -lated, -lating. to remove the hair from (hides, skin, etc.). [1550-60; < L *dēpilatus* (ptp. of *dēpilare* to pluck), equiv. to *dē-* + *pilāre* to deprive of hair (deriv. of *pilus* a hair) + -atus -AT-'] —de-pli-a-tion, n. —de-pli-a'tor, n.

de-pli-a-to-ry (di plä'tōrē, -tōr'ē), adj., n., pl. -ries. —adj. 1. capable of removing hair. —n. 2. a depilatory agent. 3. such an agent in a mild liquid or cream form for temporarily removing unwanted hair from the body. [1595-1605; < ML *dēpilātorius* < L *dēpilāre* (see *DEPI- LATE*) + -torius -TOR-']

de-plane (dē plān'), v.t., -planed, -plan-ing. to disem- bark from an airplane. [1920-25; *DE* + *PLANE*']

de-plan-o (di plā'nō, dē, dā), Chiefly Law. 1. without argument. 2. by manifest right; plainly. [*< L dē planō*]

de-plete (di plēt'), u.t., -pleted, -plet-ing. to decrease seriously or exhaust the abundance or supply of: The fire had depleted the game in the forest. Extravagant spend- ing soon depleted his funds. [1800-10; < L *dēpletus* empty (ptp. of *dēplere* to empty out), equiv. to *dē-* + *plē(re)* to FILL + -tus ptp. suffix] —de-plet'a-ble, adj. —de-plet-ion, n. —de-plet'ive, de-plet'o-ry (di plē- tōr'ē), adj. —Syn. use up, drain, reduce, consume, lessen.

de-plet-ion allow-ance, a tax reduction allowed on income from exhaustible resources, as oil or timber.

de-plor-a-ble (di plōr'ə bəl, -plōr'ē), adj. 1. causing or being a subject for grief or regret; lamentable: the de- plorable death of a friend. 2. causing or being a subject for censure, reproach, or disapproval; wretched; very bad: This room is in deplorable order. You have deplora- ble manners! [1605-15; < F *déplorable* < MF, equiv. to *dēplor*(er) (see *DEPLORE*) + -able -ABLE] —de-plor'a- ble-ness, de-plor'a-bil-i-ty, n. —de-plor'a-bly, adv.

de-plore (di plōr', -plōr'), v.t., -plored, -plor-ing. 1. to regret deeply or strongly; lament: to deplore the pres- ent state of morality. 2. to disapprove of; censure. 3. to feel or express deep grief for or in regard to: The class deplored the death of their teacher. [1550-80; < L *dē- plōrāre* to weep bitterly, complain, equiv. to *dē-* + *plōrāre* to wail, prob. of imit. orig.] —de-plor-a-tion (dēplōr'ā'shən, dē'plā-), n. —de-plor'er, n. —de- plor-ing-ly, adv. —Syn. 1. bemoan, bewail. 3. mourn.

de-plot (di plōt'), u.t. 1. Mil. to spread out (troops) so as to form an extended front or line. 2. to arrange in a position of readiness, or to move strategically or appro- priately: to deploy a battery of new missiles. —u.t. 3. to spread out strategically or in an extended front or line. 4. to come into a position ready for use: the plane can't land unless the landing gear deploys. [1470-80; < F *dé- ployer*, equiv. to *dē-* + *ployer* to fold; see *PLOY*] —de-plot'a-ble, adj. —de-plot'a-bil-i-ty, n. —de- plot'ment, n.

de-plume (dē plōōm'), u.t., -plumed, -plum-ing. 1. to deprive of feathers; pluck. 2. to strip of honor, wealth, etc. [1375-1425; late ME *dēplūmen* < ML *dēplūmare*, equiv. to L *dē-* + *plūm*(a) feather (see *PLUME*) + -are inf. suffix] —de-plu-ma-tion, n.

de-po-lar-iz-er (dē pō'lə rī'zar), n. a substance added to the electrolyte of an electric cell or battery to remove gas collected at the electrodes.

de-pollu-te (dēpō'lūtē), u.t., -luted, -lut-ing. to eliminate, clean up, or decrease pollution in (an area). [1965-70; *DE* + *POLLUTE*] —de-pollu'tion, n.

or KEY: <, descended or borrowed from; >, of, blended; c, cognate with; cf, compare; deriv., equivalent; imit., imitative; obl., oblique; r, re- sp., spelling; spelled; resp., respelling; respelled; ? , origin unknown; \* , unattested; † , probably the full key inside the front cover.

# **EXHIBIT H**

Riverside 

---

Webster's II

---

*New College Dictionary*

## Conte

Words are included in this Dictionary on the basis of their usage. Words that are known to have current trademark registrations are shown with an initial capital and are also identified as trademarks. No investigation has been made of common-law trademark rights in any word, because such investigation is impracticable. The inclusion of any word in this Dictionary is not, however, an expression of the Publisher's opinion as to whether or not it is subject to proprietary rights. Indeed, no definition in this Dictionary is to be regarded as affecting the validity of any trademark.

Copyright © 1995 by Houghton Mifflin Company. All rights reserved.

No part of this work may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or by any information storage or retrieval system without the prior written permission of Houghton Mifflin Company unless such copying is expressly permitted by federal copyright law. Address inquiries to Reference Permissions, Houghton Mifflin Company, 222 Berkeley Street, Boston MA 02116.

Illustrations azimuthal equidistant projection and sinusoidal projection © 1986 by The American Congress on Surveying and Mapping.

*Library of Congress Cataloging-in-Publication Data*

Webster's II new college dictionary.  
p. cm.

ISBN 0-395-70869-9 (alk. paper)

I. English language — Dictionaries. I. Webster's II new  
Riverside University dictionary  
PE1628.W55164 1995  
423 — dc20

95-5833  
CIP

For information about this and other Houghton Mifflin trade and reference books and multimedia products, visit  
The Bookstore at Houghton Mifflin on the World Wide Web at  
<http://www.hmco.com/trade/>.

Printed in the United States

Editorial and

Preface . . . .

Elements of t

Explanatory I

Abbreviations

Pronunciation

DICTIONARY

Abbreviations

Biographical I

Geographic N

Foreign Words

Four-Year Col

Two-Year Col

A Concise Gu

Forms of Add

Table of Meas

Periodic Table

Signs and Syn

## dependent clause • Depression glass

as a child, who relies on another for support. — **de-pend'** ent-ly *adv.*

**dependent clause** *n.* A clause that cannot stand alone as a sentence and acts as a noun, adjective, or adverb within a sentence.

**dependent variable** *n.* A mathematical variable whose value is determined by the value assumed by an independent variable.

**de-per-son-al-ize** (dē-pŕ'sŏ-nā-līz') *vt.* -ized, -iz-ing, -iz-es. 1. To deprive of personal or individual character. 2. To make impersonal <depersonalize an interview> — **de-per'son-al-i-za'tion** *n.*

**de-pict** (dī-pīkt') *vt.* -pīct-ed, -pīct-ing, -pīct-s. [Lat. *depingere*, depict: *de-*, completely + *pīngere*, to picture.] 1. To represent, as in a picture or sculpture. 2. To represent in words; describe. — **de-pīc'tion** *n.*

**de-pig-men-ta-tion** (dē-pīg'men-tā'shan, -mēn-) *n.* Loss of normal pigmentation.

**de-pil-ate** (dē-pī-lāt') *vt.* -lat-ed, -lat-ing, -lates. [Lat. *depilare*, depilate: *de-*, completely + *pīlare*, to deprive of hair < *pīlus*, hair.] To remove hair from. — **de-pī-lā'tion** *n.* — **de-pī-lā'tor** *n.*

**de-pil-a-to-ry** (dī-pī-lā'tŏ-rē, -tŏr'ē) *adj.* Capable of removing hair. — *n.* *pl.* -ries. A cream or liquid used to remove unwanted body hair.

**de-plane** (dē-plān') *vi.* -plan-ed, -plan-ing, -planes. To disembark from an aircraft.

**de-plete** (dī-plēt') *vt.* -plet-ed, -plet-ing, -pletes. [Lat. *deplere*, deplete: *de-*, to empty + *plere*, to fill.] 1. To lessen or reduce in quantity, value, or effectiveness; exhaust <depleted by the exam>. 2. To empty <deplete a barrel of oil>. — **de-plet'a-ble** *adj.* — **de-plet-ion** *n.*

**de-plor-a-ble** (dī-plŏr'ā-bal, -plŏr'ā-) *adj.* 1. Deserving severe reproach. 2. Grievous; lamentable. 3. Very bad; wretched. — **de-plor'a-ble-ness**, **de-plor'a-ble-ly** *adv.* — **de-plor'a-ble-ly** *adv.*

**de-plore** (dī-plŏr', -plŏr') *vt.* -plŏr-ed, -plŏr-ing, -plŏr-es. [OFr. *deplorare* < Lat. *deplorare*: *de-* (intensive) + *plorare*, to weep.] 1. To feel or express sorrow over. 2. To feel or express regret about. 3. To feel or express strong disapproval of; censure.

**de-play** (dī-plŏt') *v.* -play-ed, -play-ing, -plays. [Fr. *déployer* < OFr. *desplier* < Lat. *displicare*, to scatter: *dis-* (reversal) + *plicare*, to fold.] — *vt.* 1. To station (persons or forces) systematically over an area. 2. To spread out (troops) to form an extended front. — *vi.* To be or become deployed. — **de-play'ment** *n.*

**de-plume** (dē-plŏm') *vt.* -plum-ed, -plum-ing, -plumes. [ME *depluman* < OFr. *deplumer* < Med. Lat. *deplumare*: *de-*, off + *pluma*, feather.] 1. To pluck the feathers from. 2. To deprive of pride or honor. — **de-plu-me'tion** *n.*

**de-pol-a-rize** (dē-pŏ-lā-rīz') *vt.* -ized, -iz-ing, -iz-es. To counteract or eliminate the polarization of. — **de-pŏ-lā-rī-za'tion** *n.*

**de-po-lit-i-cize** (dē-pŏ-lī-tī-sīz') *vt.* -cīsed, -cīz-ing, -cīz-es. To remove from the political sphere <depoliticize a world hunger program>. — **de-pŏ-lī-tī-cī-za'tion** *n.*

**de-poll-u-te** (dē-pŏ-lŏt') *vt.* -lut-ed, -lut-ing, -lutes. To remove the pollution from <depollute a lake>.

**de-pon** (dī-pŏn') *v.* -pon-ed, -pon-ing, -pon-es. [ME *deponen* < Med. Lat. *deponere* < Lat. *de-*, down + *ponere*, to put.] — *vt.* To declare or testify under oath. — *vi.* To give testimony.

**de-po-nent** (dī-pŏ-nŏnt) *adj.* [Lat. *deponens*, deponent: < Lat. *deponere*, to put down. — *see* *depona*.] Denoting a verb of active meaning but passive form, as certain Latin and Greek verbs. — *n.* 1. A deponent verb. 2. Law. A person who testifies under oath, esp. in writing.

**de-pop-u-late** (dē-pŏp'ŭ-lāt') *vt.* -lat-ed, -lat-ing, -lates. [Lat. *depopulare*, depopulate: to lay waste: *de-* (intensive) + *populari*, to ravage < *populus*, people, throng.] To reduce greatly the population of, as by expulsion, disease, or massacre. — **de-pop'ŭ-lā'tion** *n.* — **de-pop'ŭ-lā'tor** *n.*

**de-port** (dī-pŏrt', -pŏrt') *vt.* -port-ed, -port-ing, -ports. [Partly < Fr. *déporter*, to banish, and partly < OFr. *deporter*, to behave, both < Lat. *deportare*, to carry away: *de-*, away + *portare*, to carry.] 1. To expel from a country. 2. To behave or conduct (oneself) in a specified manner.

**de-port-a-ble** (dī-pŏr'tā-bal, -pŏr't-) *adj.* Subject to or punishable by deportation.

**de-port-a-tion** (dē-pŏr'tā'shan, -pŏr't-) *n.* 1. An act or instance of deporting. 2. Expulsion of an undesirable alien from a country.

**de-port-ee** (dē-pŏr'tē, -pŏr't-) *n.* A deported individual.

**de-port-ment** (dī-pŏrt'ment, -pŏrt'm-) *n.* Behavior; demeanor.

**de-posit** (dī-pŏz') *n.* The act of depositing from office.

**de-posit** (dī-pŏz') *v.* -pos-ed, -pos-ing, -pos-es. [ME *deposen* < OFr. *deposer*: *de-*, away (< Lat.) + *ponere*, to put. — *see* *rosal*.] — *vt.* 1. To remove from office or a powerful position. 2. Archaic. To put or lay down: *deposited*. 3. Law. To declare under oath, esp. in writing. — *vi.* Law. To testify, esp. in writing. — **de-pos'i-ble** *adj.*

**de-posit** (dī-pŏz't) *v.* -it-ed, -it-ing, -its. [Lat. *deponere*, deposit: *de-*, aside + *ponere*, to put.] — *vt.* 1. To lay or set down: *deposited*. 2. To put down (e.g., layers of sediment) by a natural process. 3. To give as partial payment or security. 4. To entrust (money) to a bank. — *vi.* To become deposited: *deposited*. — *n.* 1. Something entrusted for safekeeping, as money in a bank. 2. The state of being deposited. 3. A partial or initial payment of a cost or debt. 4. A sum of money

given as security for an item acquired for temporary use, as a story. 6. Something deposited esp. by a natural process, as sandy material settled out of water. — **de-pos'i-tor** *n.*

**de-pos-i-tar-y** (dī-pŏz'tī-tŏr'ē) *n.* *pl.* -ies. 1. A person with something. 2. *depository* 1.

**de-po-si-tion** (dē-pŏ-zī'shŏn) *n.* 1. The act of depositing. 2. The act of depositing. 3. Something deposited. 4. Law. Testimony under oath esp. a written statement by a witness in court in his or her absence. — **de-pŏ-si-tiŏn-al** *adj.*

**de-pos-i-to-ry** (dī-pŏz'tŏ-rē, -tŏr'ē) *n.* *pl.* -ries. A place where something is deposited for safekeeping. 2. *depository*

**de-pot** (dē-pŏt, dē-pŏt) *n.* [Fr. *dépôt* < OFr. *depost* < Lat. *deponere* < neuter p. part. of *deponere*, to deposit.] 1. A bus station. 2. A warehouse. 3. a. A storage installation for materials. b. A station for receiving, classifying, and assembling personnel.

**de-prave** (dī-prāv') *vt.* -praved, -prav-ing, -praves. To deprave, to corrupt < OFr. *depraver* < Lat. *depravare*: *de-*, against + *prava*, crooked.] To deprave morally; corrupt. — **de-prāv'ed** *adj.* — **de-prāv'er** *n.*

**de-praved** (dī-prāv'd) *adj.* Morally debased and corrupt.

**de-prav-ed-ly** (dī-prāv'id-ē, -prāv'id-ē) *adv.*

**de-prav-i-ty** (dī-prāv'itē) *n.* *pl.* -ties. 1. Moral corruption; wicked or perverse act.

**de-pre-cate** (dē-prē-kāt') *vt.* -cat-ed, -cat-ing, -cates. To deprecate, to ward off by prayer: *de-*, against + *precare*, to pray.] 1. To express disapproval of. 2. To belittle; depreciate. In recent times, deprecate has encroached upon the meaning of "to belittle." — **de-prē-ca'tion** *n.* — **de-prē-ca-to-ry** (dē-prē-kā-tŏr'ē, -tŏr'ē) *adj.* Expressing deprecation: *disapproving*.

**de-pre-ci-ate** (dī-prē-shē-āt') *v.* -at-ed, -at-ing, -ates. [Lat. *depreciare*, depreciate, alteration of *deprecare* < Lat. *deprecari*, to pray.] — *vt.* 1. To lessen the value of. 2. To cause to seem less valuable or important; disparage < depreciate the value of the dollar>. — **de-prē-ci-a'tion** *n.*

**de-pre-ci-a-tion** (dī-prē-shē-āt'shan) *n.* 1. A decrease in value, esp. because of wear or age. 2. An allowance made for a decrease in value. 3. A reduction in the purchasing value of an instance of disparaging.

**de-pre-ci-a-to-ry** (dī-prē-shē-ātŏr'ē, -tŏr'ē) *adj.* 1. Diminishing in value.

**de-pre-date** (dē-prē-dāt') *v.* -dat-ed, -dat-ing, -dates. [Lat. *deprædare*, deprædate: *de-*, against + *præda*, booty.] — *vt.* To prey on: *plunder*. — **de-prē-da'tion** *n.* — **de-prē-da'tor** *n.*

**de-press** (dī-prēs') *vt.* -pressed, -press-ing, -press-es. To press, to push down < OFr. *depresser* < Lat. *deprimere*: *de-*, down + *primere*, to press.]. 1. To lower or sadden. 2. To press down: *lower* <depress a pedal on a machine>. 3. To lessen the activity or force of: *weaken*. 4. To lower prices: *depress the market*. — **de-press'i-ble** *adj.*

**de-press-ant** (dī-prēs'ant) *adj.* Serving to lower the activities. — *n.* A depressant drug.

**de-pressed** (dī-prēs't) *adj.* 1. Low in spirits: *dejected*. 2. Flattened downward, as if pressed from above. 3. Zool. Flattened dorsal and ventral surfaces. 4. Sunk below the surrounding level. 5. Suffering from social and economic hardships.

**de-press-ing** (dī-prēs'ing) *adj.* Causing esp. emotional distress: *depressing movie*. — **de-press'ing-ly** *adv.*

**de-pres-sion** (dī-prēs'hŏn) *n.* 1. The act of depressing; being depressed. 2. An area sunk below its surroundings: *depression*. 3. A region of low barometric pressure. 4. The angle below the horizontal plane through the point of observation. 5. The angular distance of a celestial body below the horizon in force or activity. 6. Melancholy; sadness. 7. A nervous or psychotic condition marked by an inability to function, and feelings of dejection and guilt. 8. A period of economic decline, marked by unemployment, decreasing activity, and falling prices.

**Depression glass** *n.* [After the Great Depression, a period of economic hardship during which large quantities of glass were produced and sold at a low price.]

de-port: d pay d care d father d pet d be h w  
i tie l r pier o pot o toe o paw for o not





**The Ultimate Computer Reference**

*The Comprehensive Standard for Business,  
School, Library, and Home*

**Over  
2,300  
New Terms**  
With Online Updates  
Available Quarterly

# Microsoft Press **Computer Dictionary**

- **Over 7,600 terms and definitions**
- **345 illustrations and diagrams**
- **Extensive Internet and Web coverage**
- **Featured in Microsoft® Bookshelf™ 97**

**Microsoft Press**

# **EXHIBIT I**

Microsoft Press  
**Computer  
Dictionary**

Third Edition

**Microsoft Press**



**PUBLISHED BY**

Microsoft Press  
A Division of Microsoft Corporation  
One Microsoft Way  
Redmond, Washington 98052-6399

Copyright © 1997 by Microsoft Corporation

All rights reserved. No part of the contents of this book may be reproduced or transmitted in any form or by any means without the written permission of the publisher.

Library of Congress Cataloging-in-Publication Data pending.

ISBN 1-57231-743-4

Printed and bound in the United States of America.

1 2 3 4 5 6 7 8 9 QMQM 2 1 0 9 8 7

Distributed to the book trade in Canada by Macmillan of Canada, a division of Canada Publishing Corporation.

A CIP catalogue record for this book is available from the British Library.

Microsoft Press books are available through booksellers and distributors worldwide. For further information about international editions, contact your local Microsoft Corporation office. Or contact Microsoft Press International directly at fax (425) 936-7329. Visit our Web site at [mspress.microsoft.com](http://mspress.microsoft.com).

Macintosh, Power Macintosh, QuickTime, and TrueType fonts are registered trademarks of Apple Computer, Inc. Intel is a registered trademark of Intel Corporation. DirectInput, DirectX, Microsoft, Microsoft Press, MS-DOS, Visual Basic, Visual C++, Win32, Win32s, Windows, Windows NT, and XENIX are registered trademarks and ActiveMovie, ActiveX, and Visual J++ are trademarks of Microsoft Corporation. Java is a trademark of Sun Microsystems, Inc. Other product and company names mentioned herein may be the trademarks of their respective owners.

**Acquisitions Editor:** Kim Fryer

**Project Editors:** Maureen Williams Zimmerman, Anne Taussig

**Technical Editors:** Dail Magee Jr., Gary Nelson, Jean Ross, Jim Fuchs, John Conrow,  
Kurt Meyer, Robert Lyon, Roslyn Lutsch

# Contents

Introduction

v

## **Dictionary** *of Computer Terms.*

■

### **Appendix A**

**ASCII Character Set**

**520**

### **Appendix B**

**IBM Extended Character Set**

**522**

### **Appendix C**

**Apple Macintosh Extended Character Set**

**524**

### **Appendix D**

**EBCDIC Character Set**

**528**

### **Appendix E**

**Numeric Equivalents**

**534**

**filtering program**

designated output destination. A database filter, for example, might flag information of a certain age. **2.** In communications and electronics, hardware or software that selectively passes certain elements of a signal and eliminates or minimizes others. A filter on a communications network, for example, must be designed to transmit a certain frequency but attenuate (dampen) frequencies above it (a low-pass filter), those below it (a highpass filter), or those above and below it (a bandpass filter). **3.** A pattern or mask through which data is passed to weed out specified items. For instance, a filter used in e-mail or in retrieving newsgroup messages can allow users to filter out messages from other users. *See also* e-mail filter, mask. **4.** In computer graphics, a special effect or production effect that is applied to bitmapped images; for example, shifting pixels within an image, making elements of the image transparent, or distorting the image. Some filters are built into a graphics program, such as a paint program or an image editor. Others are separate software packages that plug into the graphics program. *See also* bitmapped graphics, image editor, paint program.

**filtering program** \fil'tər-ēng prō'gram\ *n.* A program that filters information and presents only results that match the qualifications defined in the program.

**FilterKeys** \fil'tər-kēz\ *n.* A Windows 95 accessibility control panel feature that enables users with physical disabilities to use the keyboard. With FilterKeys, the system ignores brief and repeated keystrokes that result from slow or inaccurate finger movements. *See also* accessibility. *Compare* MouseKeys, ShowSounds, SoundSentry, StickyKeys, ToggleKeys.

**Final-Form-Text DCA** \fī'nəl-fōrm-tekst' D-C-A\ *n.* A standard in Document Content Architecture (DCA) for storing documents in ready-to-print form for interchange between dissimilar programs. A related standard is Revisable-Form-Text DCA (RFTDCA). *Acronym:* FFTDCA (F'F-T'D-C-A'). *See also* DCA (definition 1). *Compare* Revisable-Form-Text DCA.

**find** \find\ *vb.* *See* search<sup>2</sup>.

**Finder** \fin'dər\ *n.* The standard interface to the Macintosh operating system, allowing the user to view the contents of directories (folders); to move,

**FIR port**

copy, and delete files; and to launch applications. Items in the system are often represented as icons, and a mouse or similar pointing device is used to manipulate these items. The Finder was the first commercially successful graphical user interface, and it helped launch a wave of interest in icon-based systems. *See also* MultiFinder.

**finger**<sup>1</sup> \fēng'ər\ *n.* An Internet utility, originally limited to UNIX but now available on many other platforms, that enables a user to obtain information on other users who may be at other sites (if those sites permit access by finger). Given an e-mail address, finger returns the user's full name, an indication of whether or not the user is currently logged on, and any other information the user has chosen to supply as a profile. Given a first or last name, finger returns the logon names of users whose first or last names match.

**finger**<sup>2</sup> \fēng'ər\ *vb.* To obtain information on a user by means of the finger program.

**fingerprint reader** \fēng'-ər-print rē'dər\ *n.* A scanner that reads human fingerprints for comparison to a database of stored fingerprint images.

**FIPS** \fips, F'IP-S\ *n.* *See* Federal Information Processing Standards.

**firewall** \fir'wāl\ *n.* A security system intended to protect an organization's network against external threats, such as hackers, coming from another network, such as the Internet. A firewall prevents computers in the organization's network from communicating directly with computers external to the network and vice versa. Instead, all communication is routed through a proxy server outside of the organization's network, and the proxy server decides whether it is safe to let a particular message or file pass through to the organization's network.

**firmware** \fərm'wār\ *n.* Software routines stored in read-only memory (ROM). Unlike random access memory (RAM), read-only memory stays intact even in the absence of electrical power. Startup routines and low-level input/output instructions are stored in firmware. It falls between software and hardware in terms of ease of modification. *See also* RAM, ROM.

**FIR port** \FI-R' pōrt\ *n.* Short for fast infrared port. A wireless I/O port, most common on a portable computer, that exchanges data with an

**proportional font**

presents the user with a tabbed, index-card-like selection of property pages, each of which features standard dialog-style controls for customizing parameters.

**proportional font** \prə-pōr'shən-əl font\ *n.* A set of characters in a particular style and size in which a variable amount of horizontal space is allotted to each letter or number. In a proportional font, the letter *i*, for example, is allowed less space than the letter *m*. *Compare* monospace font.

**proportional spacing** \prə-pōr'shən-əl spā'sēng\ *n.* A form of character spacing in which the horizontal space each character occupies is proportional to the width of the character. The letter *w*, for example, takes up more space than the letter *i*. *Compare* monospacing.

**proprietary** \prə-prī'ə-tār-ē\ *adj.* Of, pertaining to, or characteristic of something that is privately owned. Generally, the term refers to technology that has been developed by a particular corporation or entity, with specifications that are considered by the owner to be trade secrets. Proprietary technology may be legally used only by a person or entity purchasing an explicit license. Also, other companies are unable to duplicate the technology, both legally and because its specifications have not been divulged by the owner. *Compare* public domain.

**proprietary software** \prə-prī'ə-tār-ē soft'wār\ *n.* A program owned or copyrighted by an individual or a business and available for use only through purchase or by permission of the owner. *Compare* public-domain software.

**protected mode** \prə-tek'təd mōd'\ *n.* An operating mode of the Intel 80286 and higher microprocessors that supports larger address spaces and more advanced features than real mode. When started in protected mode, these CPUs provide hardware support for multitasking, data security, and virtual memory. The Windows NT and OS/2 operating systems run in protected mode, as do most versions of UNIX for these microprocessors. *Compare* real mode.

**protocol** \prō'tə-kol\ *n.* *See* communications protocol.

**protocol layer** \prō'tə-kol lā'ər, lār\ *n.* *See* layer.

**protocol stack** \prō'tə-kol stak\ *n.* The set of protocols that work together on different levels to

**pseudocode**

enable communication on a network. For example, TCP/IP, the protocol stack on the Internet, incorporates more than 100 standards including FTP, IP, SMTP, TCP, and Telnet. *Also called* protocol suite. *See also* ISO/OSI model.

**protocol suite** \prō'tə-kol swēt\ *n.* *See* protocol stack.

**prototyping** \prō'tə-tī-pēng\ *n.* The creation of a working model of a new computer system or program for testing and refinement. Prototyping is used in the development of both new hardware and software systems and new systems of information management. Tools used in the former include both hardware and support software; tools used in the latter can include databases, screen mockups, and simulations that, in some cases, can be developed into a final product.

**proxy** \proks'ē\ *n.* *See* proxy server.

**proxy server** \proks'ē sər'vər\ *n.* A firewall component that manages Internet traffic to and from a local area network (LAN) and can provide other features, such as document caching and access control. A proxy server can improve performance by supplying frequently requested data, such as a popular Web page, and can filter and discard requests that the owner does not consider appropriate, such as requests for unauthorized access to proprietary files. *See also* firewall.

**PrintSc key** \print' skrēn kē\ *n.* *See* Print Screen key.

**.ps** \dot'P-S\ *n.* The file extension that identifies PostScript printer files. *See also* PostScript.

**PS/2 bus** \P'S-tōō' bus\ *n.* *See* Micro Channel Architecture.

**psec** \pī'kō-sek'ənd\ *n.* *See* picosecond.

**pseudocode** \sōō'dō-kōd\ *n.* **1.** Abbreviated p-code. A machine language for a nonexistent processor (a pseudomachine). Such code is executed by a software interpreter. The major advantage of p-code is that it is portable to all computers for which a p-code interpreter exists. The p-code approach has been tried several times in the microcomputer industry, with mixed success. The best known attempt was the UCSD p-System. *See also* pseudomachine, UCSD p-System. **2.** Any informal, transparent notation in which a program or algorithm description is written. Many programmers write their programs first in a pseudocode

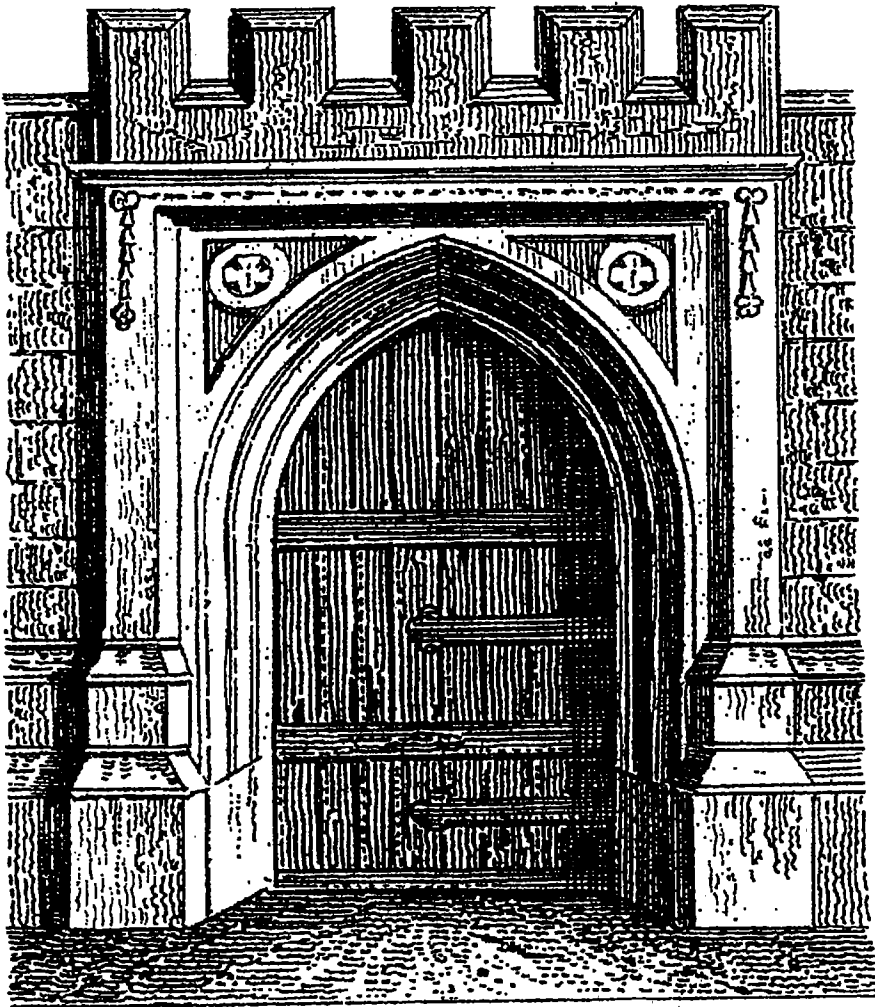
# **EXHIBIT J**



*Internet Security*

*Building Internet*

# *FIREWALLS*



*D. Brent Chapman and Elizabeth D. Zwicky*

O'Reilly & Associates, Inc.

SYM\_P\_0498347

Chapman & Zwicky  
O'Reilly & Associates, Inc.

*BUILDING INTERNET FIREWALLS*



SYM\_P\_0498348

***Building Internet Firewalls***

by D. Brent Chapman and Elizabeth D. Zwicky

Copyright © 1995 O'Reilly & Associates, Inc. All rights reserved.  
Printed in the United States of America.

***Editor:*** Deborah Russell

***Production Editor:*** Mary Anne Weeks Mayo

***Printing History:***

September 1995: First Edition.

Nutshell Handbook and the Nutshell Handbook logo are registered trademarks of O'Reilly & Associates, Inc.

Many of the designations used by manufacturers and sellers to distinguish their products are claimed as trademarks. Where those designations appear in this book, and O'Reilly & Associates, Inc. was aware of a trademark claim, the designations have been printed in caps or initial caps.

While every precaution has been taken in the preparation of this book, the publisher assumes no responsibility for errors or omissions, or for damages resulting from the use of the information contained herein.



This book is printed on acid-free paper with 85% recycled content, 15% post-consumer waste. O'Reilly & Associates is committed to using paper with the highest recycled content available consistent with high quality.

ISBN: 1-56592-124-0

## *Table of Contents*

<i>Foreword</i> .....	<i>xvii</i>
<i>Preface</i> .....	<i>xxi</i>
<i>I: Network Security</i> .....	<i>1</i>
<i>1: Why Internet Firewalls?</i> .....	<i>3</i>
What Are You Trying to Protect? .....	4
What Are You Trying To Protect Against? .....	7
How Can You Protect Your Site? .....	13
What Is an Internet Firewall? .....	17
<i>2: Internet Services</i> .....	<i>25</i>
Electronic Mail .....	26
File Transfer .....	28
Remote Terminal Access and Command Execution .....	30
Usenet News .....	31
The World Wide Web .....	32
Other Information Services .....	34
Information About People .....	35
Real-Time Conferencing Services .....	37
Name Service .....	38
Network Management Services .....	39
Time Service .....	40
Network File Systems .....	41

Window Systems .....	42
Printing Systems .....	42
<b>3: Security Strategies .....</b>	<b>45</b>
Least Privilege .....	45
Defense in Depth .....	47
Choke Point .....	48
Weakest Link .....	48
Fail-Safe Stance .....	49
Universal Participation .....	52
Diversity of Defense .....	53
Simplicity .....	54
<b>II: Building Firewalls .....</b>	<b>55</b>
<b>4: Firewall Design .....</b>	<b>57</b>
Some Firewall Definitions .....	57
Firewall Architectures .....	63
Variations on Firewall Architectures .....	71
Internal Firewalls .....	82
What the Future Holds .....	88
<b>5: Bastion Hosts .....</b>	<b>91</b>
General Principles .....	92
Special Kinds of Bastion Hosts .....	93
Choosing a Machine .....	94
Choosing a Physical Location .....	98
Locating the Bastion Host on the Network .....	99
Selecting Services Provided by the Bastion Host .....	100
Don't Allow User Accounts on the Bastion Host .....	102
Building a Bastion Host .....	103
Operating the Bastion Host .....	126
Protecting the Machine and Backups .....	128

*Table of Contents**vii*

<b>6: Packet Filtering .....</b>	<b>131</b>
Why Packet Filtering? .....	132
Configuring a Packet Filtering Router .....	136
What Does a Packet Look Like? .....	138
What Does the Router Do with Packets? .....	154
Conventions for Packet Filtering Rules .....	158
Filtering by Address .....	161
Filtering by Service .....	164
Choosing a Packet Filtering Router .....	168
Where to Do Packet Filtering .....	180
Putting It All Together .....	182
<b>7: Proxy Systems .....</b>	<b>189</b>
Why Proxying? .....	190
How Proxying Works .....	193
Proxy Server Terminology .....	195
Using Proxying with Internet Services .....	197
Proxying Without a Proxy Server .....	199
Using SOCKS for Proxying .....	200
Using the TIS Internet Firewall Toolkit for Proxying .....	202
What If You Can't Proxy? .....	204
<b>8: Configuring Internet Services .....</b>	<b>207</b>
Electronic Mail .....	209
Simple Mail Transfer Protocol (SMTP) .....	211
Post Office Protocol (POP) .....	218
Multimedia Internet Mail Extensions (MIME) .....	221
File Transfer .....	222
File Transfer Protocol (FTP) .....	223
Trivial File Transfer Protocol (TFTP) .....	234
File Service Protocol (FSP) .....	235
UNIX-to-UNIX Copy Protocol (UUCP) .....	236
Terminal Access (Telnet) .....	238
Packet Filtering Characteristics of Telnet .....	239
Proxying Characteristics of Telnet .....	240
Summary of Telnet Recommendations .....	240
Remote Command Execution .....	240
BSD 'r' Commands .....	240

rexec .....	243
rex .....	244
Network News Transfer Protocol (NNTP) .....	245
Packet Filtering Characteristics of NNTP .....	245
Proxying Characteristics of NNTP .....	246
Dangerous Ways to Set up NNTP in a Firewall Environment .....	247
Good Ways to Set up NNTP in a Firewall Environment .....	249
Using Packet Filtering with NNTP .....	250
Summary of NNTP Recommendations .....	250
World Wide Web (WWW) and HTTP .....	250
Packet Filtering Characteristics of HTTP .....	251
Proxying Characteristics of HTTP .....	253
HTTP Security Concerns .....	254
Secure HTTP .....	259
Summary of WWW Recommendations .....	259
Other Information Services .....	260
Gopher .....	260
Wide Area Information Servers (WAIS) .....	262
Archie .....	264
Information Lookup Services .....	266
finger .....	267
whois .....	268
Real-Time Conferencing Services .....	270
talk .....	270
Internet Relay Chat (IRC) .....	272
The Multicast Backbone (MBONE) .....	275
Domain Name System (DNS) .....	278
Packet Filtering Characteristics of DNS .....	279
Proxying Characteristics of DNS .....	281
DNS Data .....	282
DNS Security Problems .....	284
Setting Up DNS to Hide Information .....	286
Setting up DNS Without Hiding Information .....	294
Summary of DNS Recommendations .....	296
syslog .....	296
Packet Filtering Characteristics of syslog .....	297
Proxying Characteristics of syslog .....	297
Summary of syslog Recommendations .....	297
Network Management Services .....	297

*Table of Contents**ix*

Simple Network Management Protocol (SNMP) .....	297
Routing Information Protocol (RIP) .....	300
ping .....	301
traceroute .....	302
Other ICMP Packets .....	304
Summary of Network Management Recommendations .....	305
Network Time Protocol (NTP) .....	306
Packet Filtering Characteristics of NTP .....	306
Proxying Characteristics of NTP .....	307
Configuring NTP to Work with a Firewall .....	307
Summary of NTP Recommendations .....	308
Network File System (NFS) .....	309
Packet Filtering Characteristics of NFS .....	311
Proxying Characteristics of NFS .....	312
Summary of NFS Recommendations .....	312
Network Information Service/Yellow Pages (NIS/YP) .....	312
Packet Filtering Characteristics of NIS/YP .....	313
Proxying Characteristics of NIS/YP .....	313
Summary of NIS/YP Recommendations .....	313
X11 Window System .....	313
Packet Filtering Characteristics of X11 .....	315
Summary of X11 Recommendations .....	317
Printing Protocols (lpr and lp) .....	317
Packet Filtering Characteristics of lpr .....	318
Proxying Characteristics of lpr .....	318
Packet Filtering and Proxying Characteristics of lp .....	319
Summary Recommendations for Printing Protocols .....	319
Analyzing Other Protocols .....	319
 <i>9: Two Sample Firewalls .....</i>	 <i>321</i>
Screened Subnet Architecture .....	321
Screened Host Architecture .....	340
 <i>10: Authentication and Inbound Services .....</i>	 <i>351</i>
Risks of Using Inbound Services .....	352
What Is Authentication? .....	356
Authentication Mechanisms .....	359
Complete Authentication Systems .....	365
Network-Level Encryption .....	370



x

*Table of Contents*

Terminal Servers and Modem Pools .....	374
<b><i>III: Keeping Your Site Secure .....</i></b>	<b><i>377</i></b>
<b><i>11: Security Policies .....</i></b>	<b><i>377</i></b>
Your Security Policy .....	378
Putting Together a Security Policy .....	384
Getting Strategic and Policy Decisions Made .....	387
What If You Can't Get a Security Policy? .....	392
<b><i>12: Maintaining Firewalls .....</i></b>	<b><i>393</i></b>
Housekeeping .....	393
Monitoring Your System .....	396
Keeping Up to Date .....	405
How Long Does It Take? .....	408
When Should You Start Over? .....	409
<b><i>13: Responding to Security Incidents .....</i></b>	<b><i>411</i></b>
Responding to an Incident .....	411
What To Do After an Incident .....	419
Pursuing and Capturing the Intruder .....	420
Planning Your Response .....	423
Being Prepared .....	432
<b><i>IV: Appendixes .....</i></b>	<b><i>441</i></b>
<b><i>A: Resources .....</i></b>	<b><i>443</i></b>
WWW Pages .....	443
FTP Sites .....	444
Mailing Lists .....	444
Newsgroups .....	446
Response Teams and Other Organizations .....	447
Conferences .....	450
Papers .....	452
Books .....	454

*Table of Contents**xi*

<i>B: Tools</i> .....	457
Authentication Tools .....	458
Analysis Tools .....	459
Packet Filtering Tools .....	461
Proxy Systems Tools .....	462
Daemons .....	462
Utilities .....	463
<i>C: TCP/IP Fundamentals</i> .....	465
Introduction to TCP/IP .....	465
A Data Communications Model .....	466
TCP/IP Protocol Architecture .....	469
Network Access Layer .....	470
Internet Layer .....	472
Transport Layer .....	477
Application Layer .....	481
Addressing, Routing, and Multiplexing .....	483
The IP Address .....	485
Internet Routing Architecture .....	490
The Routing Table .....	493
Protocols, Ports, and Sockets .....	496
<i>Index</i> .....	503

real servers, such as a screening router or a dual-homed host that doesn't route packets. If there is IP-level connectivity between the clients and the real servers, the clients can bypass the proxy system (and presumably so can someone from the outside).

## *Why Proxying?*

There's no point in connecting to the Internet if your users can't access it. On the other hand, there's no safety in connecting to the Internet if there's free access between it and every host at your site. Some compromise has to be applied.

The most obvious compromise is to provide a single host with Internet access for all your users. However, this isn't a satisfactory solution because these hosts aren't transparent to users. Users who want to access network services can't do so directly. They have to log in to the dual-homed host, do all their work from there, and then somehow transfer the results of their work back to their own workstations. At best, this multiple-step process annoys users by forcing them to do multiple transfers and work without the customizations they're accustomed to.

The problem is worse at sites with multiple operating systems; if your native system is a Macintosh, and the dual-homed host is a UNIX system, the UNIX system will probably be completely foreign to you. You'll be limited to using whatever tools are available on the dual-homed host, and these tools may be completely unlike (and may seem inferior to) the tools you use on your own system.

Dual-homed hosts configured without proxies therefore tend to annoy their users and significantly reduce the benefit people get from the Internet connection. Worse, they usually don't provide adequate security; it's almost impossible to adequately secure a machine with many users, particularly when those users are explicitly trying to get to the external universe. You can't effectively limit the available tools, because your users can always transfer tools from internal machines that are the same type. For example, on a dual-homed host you can't guarantee that all file transfers will be logged because people can use their own file transfer agents that don't do logging.

Proxy systems avoid user frustration and the insecurities of a dual-homed host. They deal with user frustration by automating the interaction with the dual-homed host. Instead of requiring users to deal directly with the dual-homed host, proxy systems allow all interaction to take place behind the scenes. The user has the illusion he is dealing directly (or almost directly) with the server on the Internet that he really wants to access, with a minimum of direct interaction with the dual-homed host. Figure 7-1 illustrates the difference between reality and illusion with proxy systems.

Proxy systems deal with the insecurity problems by avoiding user logins on the dual-homed host and by forcing connections through controlled software. Because the proxy software works without requiring user logins, the host it runs on is safe from the randomness of having multiple logins. It's also impossible for anybody to

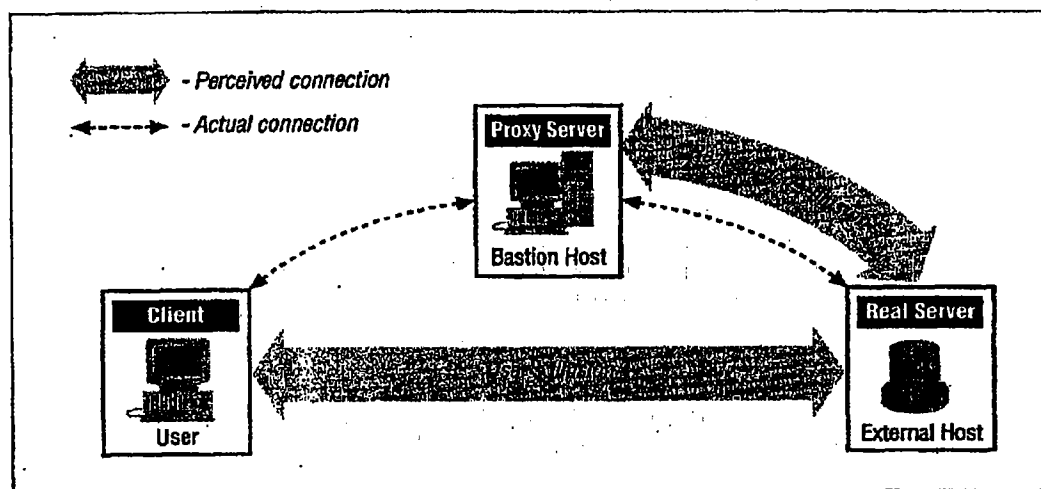


Figure 7-1: Proxies—reality and illusion

install uncontrolled software to reach the Internet; the proxy acts as a control point.

## Advantages of Proxying

There are a number of advantages to using proxy services.

### *Proxy services allow users to access Internet services 'directly'*

With the dual-homed host approach, a user needs to log into the host before using any Internet services. This is often inconvenient, and some users become so frustrated that they look for ways around the firewall. With proxy services, users think they're interacting directly with Internet services.

Of course, there's more going on behind the scenes but it's usually transparent to users. While proxy services allow users to access Internet services from their own systems, they do so without allowing packets to pass directly between the user's system and the Internet. The path is indirect, either through a dual-homed host, or through a bastion host and screening router combination.

### *Proxy services are good at logging*

Because proxy servers understand the underlying protocol, they allow logging to be performed in a particularly effective way. For example, instead of logging all of the data transferred, an FTP proxy server logs only the commands issued and the server responses received; this results in a much smaller and more useful log.

## ***Disadvantages of Proxying***

There are also some disadvantages to using proxy services.

### ***Proxy services lag behind nonproxied services***

Although proxy software is widely available for the older and simpler services like FTP and Telnet, proven software for newer or less widely used services is harder to find. There's usually a distinct lag between the introduction of a service and the availability of proxying servers for it; the length of the lag depends primarily on how well the service is designed for proxying. This makes it difficult for a site to offer new services immediately as they become available. Until suitable proxy software is available, a system that needs new services may have to be placed outside the firewall, opening up potential security holes.

### ***Proxy services may require different servers for each service***

You may need a different proxy server for each protocol, because the proxy server has to understand the protocol in order to determine what to allow and disallow, and in order to masquerade as a client to the real server and as the real server to the proxy client. Collecting, installing, and configuring all these various servers can be a lot of work.

Products and packages differ greatly in the ease with which they can be configured, but making things easier in one place can make it harder in others. For example, servers that are particularly easy to configure are usually limited in flexibility; they're easy to configure because they make certain assumptions about how they're going to be used, which may or may not be correct or appropriate for your site.

### ***Proxy services usually require modifications to clients, procedures, or both***

Except for a few services designed for proxying, proxy servers require modifications to clients and/or procedures. Either kind of modification has drawbacks; people can't always use the readily available tools with their normal instructions.

Because of these modifications, proxied applications don't work as well as nonproxied applications. They tend to bend protocol specifications, and some clients and servers are less flexible than others.

### ***Proxy services aren't workable for some services***

Proxying relies on the ability to insert the proxy server between the client and the real server; that requires relatively straightforward interaction between the two. A service like *talk* that has complicated and messy interactions may never be possible to proxy (see the discussion of *talk* in Chapter 8).

*Proxy services don't protect you from all protocol weaknesses*

As a security solution, proxying relies on the ability to determine which operations in a protocol are safe. Not all protocols provide easy ways to do this. The X Window System protocol, for example, provides a large number of unsafe operations, and it's difficult to make it work while removing the unsafe operations. HTTP is designed to operate effectively with proxy servers, but it's also designed to be readily extensible, and it achieves that goal by passing data that's going to be executed. It's impossible for a proxy server to protect you from the data; it would have to understand the data being passed and determine whether it was dangerous or not.

## *How Proxying Works*

The details of how proxying works differ from service to service. Some services provide proxying easily or automatically; for those services, you set up proxying by making configuration changes to normal servers. For most services, however, proxying requires appropriate proxy server software on the server side. On the client side, it needs one of the following:

*Custom client software*

With this approach, the software must know how to contact the proxy server instead of the real server when a user makes a request (for example, for FTP or Telnet), and how to tell the proxy server what real server to connect.

*Custom user procedures*

With this approach, the user uses standard client software to talk to the proxy server and tells it to connect to the real server, instead of to the real server directly.

### *Using Custom Client Software for Proxying*

The first approach is to use custom client software for proxying. There are a few problems associated with this approach.

Appropriate custom client software is often available only for certain platforms. If it's not available for one of your platforms, your users are pretty much out of luck. For example, the *Igateway* package from Sun is a proxy package for FTP and Telnet, but you can only use it on Sun machines because it provides only precompiled Sun binaries. If you're going to use proxy software, you obviously need to choose software that's available for the needed platforms.

Even if software is available for your platforms, it may not be software your users want. For example, on the Macintosh, there are dozens of FTP client programs. Some of them have really impressive graphical user interfaces. Others have other useful features; for example, *anarchie* is a program that combines an Archie client

# **EXHIBIT K**

# Computer Professional's Dictionary

Allen L. Wyatt

Osborne McGraw-Hill  
Berkeley New York St. Louis San Francisco  
Auckland Bogotá Hamburg London Madrid  
Mexico City Milan Montreal New Delhi Panama City  
Paris São Paulo Singapore Sydney  
Tokyo Toronto



Osborne McGraw-Hill  
2600 Tenth Street  
Berkeley, California 94710  
U.S.A.

Osborne McGraw-Hill offers software for sale. For information on software, translations, or book distributors outside of the U.S.A., please write to Osborne McGraw-Hill at the above address.

This book is printed on recycled paper.

**Computer Professional's Dictionary**

Copyright © 1990 by Discovery Computing Inc. All rights reserved. Printed in the United States of America. Except as permitted under the Copyright Act of 1976, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the publisher, with the exception that the program listings may be entered, stored, and executed in a computer system, but they may not be reproduced for publication.

The manuscript for this book was prepared and submitted to Osborne McGraw-Hill in electronic form. The acquisitions editor for this project was Roger Stewart, the technical reviewer was Chuck Guzis, and the project editor was Laura Sackerman.

Text design by Judy Wohlfrom and Deborra Knotts, using Baskerville for text body and display. Graphics by Lance Ravella.

Color separation and cover supplier, Phoenix Color Corporation. Book printed and bound by R.R. Donnelley & Sons Company, Crawfordsville, Indiana.

1234567890 DOC 99876543210

ISBN 0-07-881705-6

Information has been obtained by Osborne McGraw-Hill from sources believed to be reliable. However, because of the possibility of human or mechanical error by our sources, Osborne McGraw-Hill, or others, Osborne McGraw-Hill does not guarantee the accuracy, adequacy, or completeness of any information and is not responsible for any errors or omissions or the results obtained from use of such information.

**application layer**

**application layer** In the OSI communication model, this is the level at which the user or an application program interacts. It is layer 7 of the OSI model. See also *open system interconnection*.

**application program** See *application*.

**application program interface** A series of defined interface standards for an application. An API typically defines how an application should appear to a user, how input should be requested and obtained, and how output should be done.

**application rational interface logic** (APRIL) A logic chip made by IBM that learns from its environment using neural networking techniques.

**application shortcut key** In the Microsoft Windows environment, one of several special key combinations that bring an application to the foreground.

**application software** See *application*.

**application-specific integrated circuit** Customized chips containing a collection of predesigned circuits selected from a standard library of such circuits. Since no customized or specialized circuits are used, ASIC design is much faster than designing a chip from scratch.

**application portability profile** A set of standardized tests used to determine how portable a program is among differing hardware and operating system platforms. The test was developed by the National Institute for Science and Technology for use in the federal government.

**application programmer** A programmer who specializes in writing, analyzing, and maintaining application software.

**APRIL** See *application rational interface logic*.

**APSE** An acronym for Ada program support environment.

# EXHIBIT L

United States (change)

[Microsoft.com Home](#)[Site Map](#)

Search: Excel 2003 assistance

[Go](#)[Home](#)[Assistance](#)[Training](#)[Templates](#)[Clip Art and Media](#)[Downloads](#)[Office Marketplace](#)[Work Essentials](#)[Microsoft Office System](#)[Deployment Center](#)**Things To Do**[Suggest new content](#)[Get answers from other Office users](#)[Get our newsletter](#)[Contact Us](#)**Statistical functions**[Help](#)[Assistance](#) > [Excel 2003](#) > [Working with Data](#) > [Function Reference](#) > [Statistical Functions](#)


Function	Description
<a href="#">AVEDEV</a>	Returns the average of the absolute deviations of data points from their mean
<a href="#">AVERAGE</a>	Returns the average of its arguments
<a href="#">AVERAGEA</a>	Returns the average of its arguments, including numbers, text, and logical values
<a href="#">BETADIST</a>	Returns the beta cumulative distribution function
<a href="#">BETAINV</a>	Returns the inverse of the cumulative distribution function for a specified beta distribution
<a href="#">BINOMDIST</a>	Returns the individual term binomial distribution probability
<a href="#">CHIDIST</a>	Returns the one-tailed probability of the chi-squared distribution
<a href="#">CHIINV</a>	Returns the inverse of the one-tailed probability of the chi-squared distribution
<a href="#">CHITEST</a>	Returns the test for independence
<a href="#">CONFIDENCE</a>	Returns the confidence interval for a population mean
<a href="#">CORREL</a>	Returns the correlation coefficient between two data sets
<a href="#">COUNT</a>	Counts how many numbers are in the list of arguments
<a href="#">COUNTA</a>	Counts how many values are in the list of arguments
<a href="#">COUNTBLANK</a>	Counts the number of blank cells within a range
<a href="#">COUNTIF</a>	Counts the number of nonblank cells within a range that meet the given criteria
<a href="#">COVAR</a>	Returns covariance, the average of the products of paired deviations
<a href="#">CRITBINOM</a>	Returns the smallest value for which the cumulative binomial distribution is less than or equal to a criterion value
<a href="#">DEVSQ</a>	Returns the sum of squares of deviations
<a href="#">EXPONDIST</a>	Returns the exponential distribution
<a href="#">FDIST</a>	Returns the F probability distribution
<a href="#">FINV</a>	Returns the inverse of the F probability distribution
<a href="#">FISHER</a>	Returns the Fisher transformation
<a href="#">FISHERINV</a>	Returns the inverse of the Fisher transformation
<a href="#">FORECAST</a>	Returns a value along a linear trend
<a href="#">FREQUENCY</a>	Returns a frequency distribution as a vertical array
<a href="#">FTEST</a>	Returns the result of an F-test
<a href="#">GAMMADIST</a>	Returns the gamma distribution
<a href="#">GAMMAINV</a>	Returns the inverse of the gamma cumulative distribution
<a href="#">GAMMALN</a>	Returns the natural logarithm of the gamma function, $\Gamma(x)$
<a href="#">GEOMEAN</a>	Returns the geometric mean
<a href="#">GROWTH</a>	Returns values along an exponential trend
<a href="#">HARMEAN</a>	Returns the harmonic mean
<a href="#">HYPGEOMDIST</a>	Returns the hypergeometric distribution
<a href="#">INTERCEPT</a>	Returns the intercept of the linear regression line
<a href="#">KURT</a>	Returns the kurtosis of a data set
<a href="#">LARGE</a>	Returns the k-th largest value in a data set
<a href="#">LINEST</a>	Returns the parameters of a linear trend
<a href="#">LOGEST</a>	Returns the parameters of an exponential trend
<a href="#">LOGINV</a>	Returns the inverse of the lognormal distribution
<a href="#">LOGNORMDIST</a>	Returns the cumulative lognormal distribution
<a href="#">MAX</a>	Returns the maximum value in a list of arguments
<a href="#">MAXA</a>	Returns the maximum value in a list of arguments, including numbers, text, and logical values
<a href="#">MEDIAN</a>	Returns the median of the given numbers
<a href="#">MIN</a>	Returns the minimum value in a list of arguments
<a href="#">MINA</a>	Returns the smallest value in a list of arguments, including numbers, text, and logical values
<a href="#">MODE</a>	Returns the most common value in a data set

<b>NEGBINOMDIST</b>	Returns the negative binomial distribution
<b>NORMDIST</b>	Returns the normal cumulative distribution
<b>NORMINV</b>	Returns the inverse of the normal cumulative distribution
<b>NORMSDIST</b>	Returns the standard normal cumulative distribution
<b>NORMSINV</b>	Returns the inverse of the standard normal cumulative distribution
<b>PEARSON</b>	Returns the Pearson product moment correlation coefficient
<b>PERCENTILE</b>	Returns the k-th percentile of values in a range
<b>PERCENTRANK</b>	Returns the percentage rank of a value in a data set
<b>PERMUT</b>	Returns the number of permutations for a given number of objects
<b>POISSON</b>	Returns the Poisson distribution
<b>PROB</b>	Returns the probability that values in a range are between two limits
<b>QUARTILE</b>	Returns the quartile of a data set
<b>RANK</b>	Returns the rank of a number in a list of numbers
<b>RSQ</b>	Returns the square of the Pearson product moment correlation coefficient
<b>SKEW</b>	Returns the skewness of a distribution
<b>SLOPE</b>	Returns the slope of the linear regression line
<b>SMALL</b>	Returns the k-th smallest value in a data set
<b>STANDARDIZE</b>	Returns a normalized value
<b>STDEV</b>	Estimates standard deviation based on a sample
<b>STDEVA</b>	Estimates standard deviation based on a sample, including numbers, text, and logical values
<b>STDEV.P</b>	Calculates standard deviation based on the entire population
<b>STDEVPA</b>	Calculates standard deviation based on the entire population, including numbers, text, and logical values
<b>STEYX</b>	Returns the standard error of the predicted y-value for each x in the regression
<b>TDIST</b>	Returns the Student's t-distribution
<b>TINV</b>	Returns the inverse of the Student's t-distribution
<b>TREND</b>	Returns values along a linear trend
<b>TRIMMEAN</b>	Returns the mean of the interior of a data set
<b>TTEST</b>	Returns the probability associated with a Student's t-test
<b>VAR</b>	Estimates variance based on a sample
<b>VARA</b>	Estimates variance based on a sample, including numbers, text, and logical values
<b>VAR.P</b>	Calculates variance based on the entire population
<b>VARPA</b>	Calculates variance based on the entire population, including numbers, text, and logical values
<b>WEIBULL</b>	Returns the Weibull distribution
<b>ZTEST</b>	Returns the one-tailed probability-value of a z-test

Was this information helpful?




 [Printer-friendly version](#)

[Accessibility](#) | [Contact Us](#) | [Free Newsletter](#) | [Office Worldwide](#) 

© 2006 Microsoft Corporation. All rights reserved. [Legal](#) | [Trademarks](#) | [Privacy Statement](#)

**Microsoft**

**CERTIFICATE OF SERVICE**

I hereby certify that on the 12<sup>th</sup> day of July, 2006, I electronically filed the foregoing document, **REDACTED VERSION OF DECLARATION OF GEOFFREY M. GODFREY IN SUPPORT OF DEFENDANTS' JOINT CLAIM CONSTRUCTION RESPONSE BRIEF**, with the Clerk of the Court using CM/ECF which will send notification of such filing to the following:

John F. Horvath, Esq.  
Fish & Richardson, P.C.  
919 North Market Street, Suite 1100  
Wilmington, DE 19801

Richard L. Horwitz, Esq.  
David E. Moore, Esq.  
Potter Anderson & Corroon LLP  
Hercules Plaza  
1313 North Market Street, 6<sup>th</sup> Floor  
Wilmington, DE 19801

Additionally, I hereby certify that on the 12<sup>th</sup> day of July, 2006, the foregoing document was served via email on the following non-registered participants:

Howard G. Pollack, Esq.  
Michael J. Curley, Esq.  
Fish & Richardson  
500 Arguello Street, Suite 500  
Redwood City, CA 94063  
650.839.5070

Holmes Hawkins, III, Esq.  
King & Spalding  
191 Peachtree Street  
Atlanta, GA 30303  
404.572.4600

Theresa Moehlman, Esq.  
King & Spalding LLP  
1185 Avenue of the Americas  
New York, NY 10036-4003  
212.556.2100

/s/ Richard K. Herrmann  
Richard K. Herrmann (#405)  
Mary B. Matterer (#2696)  
Morris, James, Hitchens & Williams LLP  
222 Delaware Avenue, 10th Floor  
Wilmington, DE 19801  
(302) 888-6800  
rherrmann@morrisjames.com

*Counsel for Symantec Corporation*